

HIGH POINT PHASE I – GRADING AND INFRASTRUCTURE  
SEATTLE, WASHINGTON  
SECTION 02310  
NATURAL DRAINAGE SYSTEM SOIL MIX

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Work includes but is not limited to the following:
1. Natural Drainage System (NDS) soil mixes.

1.2 SUBMITTALS

- A. Submit the following in accordance with Section 01300 – Submittals:
1. Manufacturer certification that the organic compost material meets the specifications in Part 2.1, including certified laboratory test results dated within 60 days of placement of material.
  2. As construction progresses, resubmit every 60 days manufacturer certification that the organic compost material meets the specifications in Part 2.1, including certified laboratory test results dated within 60 days of placement of material.
  3. A grain-size analysis per ASTM Designation D 422 (Standard Test Method for Particle-Size Analysis of Soils) from a representative sample of the gravelly sand material, demonstrating that it meets the specifications in Part 2.2.
  4. Organic content and permeability test results demonstrating the organic soil mixture meets the requirements specified in Parts 3.1.A.1 and 3.1.A.2.
- B. Submit the following test results prior to mixing of compost with other specified materials in accordance with Section 01300 – Submittals:
1. Solvita Compost Maturity Test of Organic Compost: Test results of Organic Compost shall be submitted one (1) working day prior to mixing Organic Compost with other NDS soil materials specified in Part 2. Organic Compost material that does not meet specifications noted in Part 2 shall not be mixed as NDS soil nor delivered to the site. Organic Compost material to be used in following day mixing operation shall be tested each day prior to mixing operation (i.e. this will be a continuous, at times daily, submittal process).

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Organic Compost: derive from a Type 1 feedstock and produced by a facility in compliance with WAC Chapter 173-350 (Solid Waste Handling Standards), Section 220 (Composting Facilities).
1. Meet Grade AA Compost as defined by the Washington State Department of Ecology's Interim Guidelines for Compost Quality (Publication #94-38, Revised November 1994).
  2. Meet Grading Criteria: 100 percent passing a ½-inch screen.
  3. Decomposed Organic Compost shall be mature as US Composting Council stability test ratings referred to in the WAC 173-350.
  4. Meet Sovita Compost Maturity Test Score: 6 or above. Solvita Compost Maturity Test is available from Woods End Research Laboratory, phone (207) 293-2457 or 1(800) 451-0337, or website address: [www.woodsend.org](http://www.woodsend.org).
- B. Gravelly sand: conform to the following gradation:

<u>U.S. Sieve Size</u>	<u>Percent Passing</u>
2-inch	100
¾-inch	70-100
¼-inch	50-80
No. 40	15-40
No. 200	0-3

- C. Crushed Rock: use 5/8-inch clear crushed rock with no more than a trace of sand and silt.

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- D. Fill Sand: use slightly gravelly sand that meets the following gradation:

<u>U.S. Sieve Size</u>	<u>Percent Passing</u>
No. 4	95
No. 10	70-75
No. 20	58-62
No. 40	38-42
No. 60	12-16
No. 200	< 3

- E. Provide gravelly sand free of organic material, contaminants, and hazardous materials.

### PART 3– EXECUTION

#### 3.1 MIXING

- A. NDS Soil Mix #1:
1. Mix 30 to 35 percent by volume organic compost with the remaining volume being gravelly sand to provide an organic soil mix with the following properties.
    - a. Organic content between 4 and 8 percent by dry weight per ASTM D 2974.
    - b. Minimum hydraulic conductivity rate of 4 inches per hour per ASTM Designation D 2434 when compacted to 80 percent of maximum dry density per ASTM Designation D 1557.
- B. NDS Soil Mix #2:
1. Mix three parts organic compost with one part fill sand by volume. Mix shall have an average organic content of 5 percent and be within a range of 4 to 8 percent as measured by ASTM D 2974.
  2. Mix 78 percent crushed rock to 22 percent organic mix by dry weight.
- C. Mix each NDS Soil Mix uniformly to a homogeneous consistency.
1. Do not mix in the rain or wet conditions.

#### 3.2 STORAGE

- A. Store stockpiles of organic soil mix in a manner that prevents them from becoming wet from rain, stormwater runoff, or other sources of water or contaminated by fine soil or other undesirable materials.
- B. All stockpiles of mixed and pre-mixed NDS soil material shall be protected and covered in accordance with Contract Documents.

#### 3.3 PLACEMENT

- A. Moisture condition the organic soil mixes as needed for suitable placement and compaction and at the locations shown on the Drawings.
- B. Place in lifts not exceeding 6 inches in loose thickness.
- C. Compaction
1. NDS Soil Mix #1: compact lightly organic soil mixes to not less than 70 percent and not more than 80 percent of the maximum dry density per ASTM Designation D 1557.
  2. NDS Soil Mix #2: compact to 95%.
- D. Do not drive or park equipment on the NDS soil mix once placed.

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- E. Coordinate construction scheduling so that sediment laden water does not enter NDS soil mix once placed.

END OF SECTION 02310